Cadomian paleogeography and tectonic setting as recorded in the Tauride block (Turkey)

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The Tauride block (southern Turkey) is a Cadomian type terrane rifted from NE Gondwana during the opening of the Neo-Tethys Ocean. This is supported by the Paleozoic stratigraphy of the Tauride block that is comparable to the Arabian plate, Ordovician glacial deposits found in the Taurides, and common Triassic fauna found in the Taurides and Afro-Arabia. The Tauride Neoproterozoic basement however, differs greatly from that of North Gondwana, as it is made mostly of low grade greywackes intruded by late Ediacaran magmatism, much like most Cadomian basement outcrops in Europe. In the Karacahisar dome in the southern-central Taurides, Neoproterozoic basement metasediments and intrusive rocks are overlain by Cambro-Ordovician, Carboniferous and Triassic sediments. We studied U-Pb-Hf in zircons from Karacahisar in order to constrain the Cadomian crustal evolution of the Taurides, to evaluate their sedimentary provenance, constrain the paleogeography, and to assess the Tauride-Gondwana linkage. We show that the Tauride basement includes mostly detritus derived from Pan-African orogens, but also a noticable amounts of ancient detrital zircons (1.0 and 2.5 Ga) for which there is no recognizable source in North Gondwana. As only minor exposures of 1.0 and 2.5 Ga crustal vestiges are currently known in North Africa and Arabia, we infer that terranes that hosted pre-Neoproterozoic rocks were dispersed within the peripheral Cadomian realm itself, and may be currently hidden beneath Anatolia and the East Mediterranean. Cover sediments of the Taurides, from the Cambrian through to the Upper Triassic, portray a detrital zircon U-Pb-Hf signal much like typical North Gondwana sediments. Our results show that the Tauride basement evolved in a proto-Cadomian back-arc basin adjacent to the North Gondwana active margin during the Neoproterozoic, and was accreted to the supercontinent prior to the onset of Cambrian sedimentation on the North Gondwana platform.